

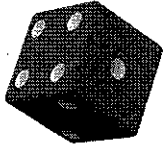

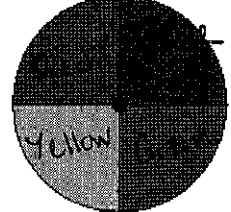
Intro to Probability – Guided Notes 1


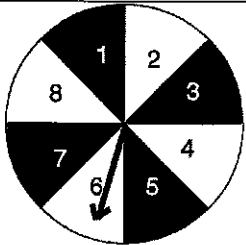
Goal: to determine the experimental probability of an event and use experimental probability to make predictions.

Each repetition or observation of an experiment is a _____. Each possible result is an _____. The _____ of an experiment is the set of all possible outcomes.

Idea 1: Identifying Sample Spaces and Outcomes

Identify the sample space and the outcome shown for each experiment.

Experiment	Rolling a dice (number cube)	Tossing a coin	Spinning a game spinner
			
Sample Space			

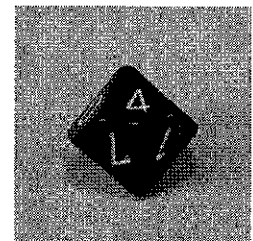
Tossing two coins	Spinning a game spinner
Sample Space: 	Sample Space: 
Outcome Shown:	Outcome Shown:

You Try!

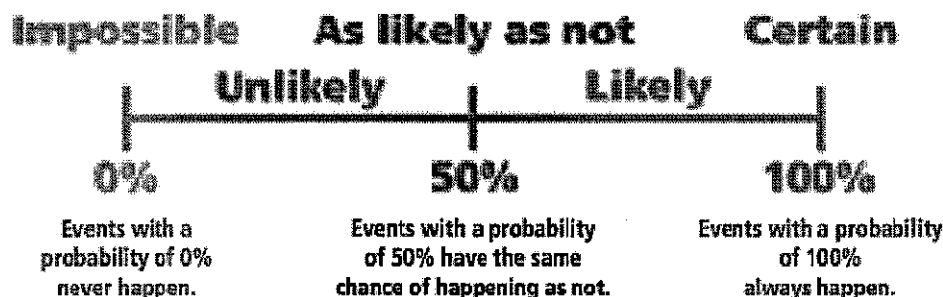
Identify the sample space and the outcome shown for the experiment: rolling an 8-sided dice.

Sample Space:

Outcome Shown:



An _____ is an outcome or a set of outcomes in an experiment. _____ is defined as the chance of an event occurring. Probabilities are written as fractions, as decimals from 0 to 1, or as percents from 0% to 100%



Equally Likely to Occur: _____
 Less Likely To Occur: _____
 More Likely To Occur: _____

If something is extremely unlikely, is it impossible? _____

If something is extremely likely, is it certain? _____

What is more likely to happen? Something with a $\frac{1}{2}$ chance or a $\frac{6}{14}$ chance? _____

Idea 2: Estimating the Likelihood of an Event

Write *impossible*, *unlikely*, *as likely as not*, *likely*, or *certain* to describe each event.

Event	Likelihood
There are 31 days in August.	
Carlos correctly guesses a number between 1 and 1000.	
A coin lands heads up.	
Cecilia rolls a 10 on a standard number cube (6-sided dice).	

You Try!

Write *impossible*, *unlikely*, *as likely as not*, *likely*, or *certain* to describe each event.

Event	Likelihood
Anthony rolls a number less than 7 on a standard number cube (6-sided dice).	
A shoe selected from a pair of shoes fits the right foot.	
Katrina correctly guesses the last digit of a phone number	
Max pulls a green marble from a bag of all green marbles	
A randomly selected month contains the letter R	

Idea 3: Finding Experimental Probability

You can estimate the probability of an event by performing an experiment. The _____ probability of an event is the ratio of the number of times the event occurs to the number of trials. The more trials performed, the more accurate the estimate will be.

Experimental Probability

$$\text{experimental probability} = \frac{\text{number of times the event occurs}}{\text{number of trials}}$$

Example:

Spinner: <http://www.mathplayground.com/probability.html>

An experiment consists of spinning a spinner. Use the class results to fill in the table. Then use the table to find the experimental probability of each event.

Spinner lands on red: _____

Spinner does not land on red: _____

Spinner lands on purple: _____

Spinner does not land on green: _____

Color	Frequency
Red	
Orange	
Purple	
Yellow	
Green	

You Try!

Use the information from Example 3 to find the experimental probability of the following events:

Spinner lands on orange: _____

Spinner does not land on yellow: _____

Experimental probability is important because it would be prohibitively costly to do millions of trials. The more trials you do, the more accurate a prediction you can make. **You can use experimental probability to make predictions. A prediction is an estimate or guess about something that has not yet happened.**

Idea 4: Word Problem Application

A manufacturer inspects 800 light bulbs and finds that 796 of them have no defects. What is the experimental probability that a light bulb chosen at random has no defects?

Solution: _____

The manufacturer sends a shipment of 2400 light bulbs to a retail store. Predict the number of light bulbs in the shipment that are likely to have no defects. How many will probably have defects?

Solution: _____

You Try!

Toyota inspects 1500 electric hybrid motors for its new Prius model and finds 1497 to have no defects. What is the experimental probability that a motor chosen at random will have no defects?

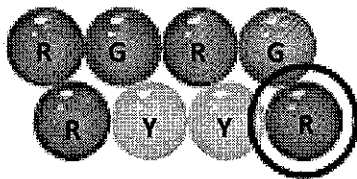
Solution: _____

There are 35,000 motors in a warehouse in California. Predict the number of motors that are likely to have no defects.

Solution: _____

Homework:

1. Identify the sample space and the outcome shown for selecting a marble. (R = red, G = green, Y = yellow)



2. An experiment consists of spinning a spinner. Use the results in the table to find the experimental probability of landing on blue. What about landing on a color other than blue?

Outcome	Frequency
Red	9
Blue	6
Yellow	5

3. The neighbor's dog barked at Tana the last 4 out of 5 times she walked by their house.
- What is the experimental probability that the dog barks at Tana when she walks past the house?
 - Predict the number of times the dog will bark at Tana if she walks past the house 45 times.
4. You go to the world's smallest amusement park. There are 5 different rides, 3 roller coasters, and 2 shops. How many different ways can you visit one ride, one roller coaster, and one shop?